General Specifications

Electrical Capacity (Resistive Load)

Power Level (silver): 6A @ 125V AC & 3A @ 250V AC
4A @ 30V DC for On-None-On; 3A @ 30V DC for all other circuits

Logic Level (gold): 0.4VA maximum @ 28V AC/DC maximum
(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)

Logic/Power Level (gold over silver): Combines silver & gold ratings
Note: Find additional explanation of dual rating & operating range in Supplement section.

Other Ratings

Contact Resistance: 10 milliohms maximum for silver; 20 milliohms maximum for gold

Insulation Resistance: 1,000 megohms minimum @ 500V DC

Dielectric Strength: 1,000V AC minimum between contacts for 1 minute minimum;
1,500V AC minimum between contacts and case for 1 minute minimum

Mechanical Life: 50,000 operations minimum

Electrical Life: 25,000 operations minimum for silver; 50,000 operations minimum for gold;
50,000 operations minimum for silver at 3A @ 125V AC

Angle of Throw: 25°

Materials & Finishes

Actuator Clip & Mounting Frame: Stainless Steel

Body Frame: Stainless steel

Case: Diallyl phthalate resin (UL94V–0)

Movable Contactor: Phosphor bronze with silver or gold plating

Movable Contacts: Silver alloy (code W); copper with gold plating (code G); or silver alloy with gold plating (code A)

Stationary Contacts: Silver with silver plating (code W); copper or brass with gold plating (code G);
or silver with gold plating (code A)

Terminals: Copper or brass with silver plating; or copper or brass with gold plating

Environmental Data

Operating Temp Range: –30°C through +85°C (–22°F through +185°F)

Humidity: 90 ~ 95% humidity for 96 hours @ 40°C (104°F)

Vibration: 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours

Shock: 50G (490m/s^2) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

Processing

Soldering: Wave Soldering (PC version) for Gold: See Profile A in Supplement section.
Manual Soldering for Gold: See Profile A in Supplement section.
Wave Soldering (PC version) for Silver: See Profile B in Supplement section.
Manual Soldering for Silver: See Profile B in Supplement section.
Note: Actuator must be in OFF (center) position while soldering.

Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.

Standards & Certifications

Flammability Standards: UL94V–0 for case

UL: **File No. E44145 - Recognized only when ordered with marking on switch.**
Add "/U" before first dash in part number to order UL recognized switch.
All models recognized at 6A @ 125V AC, 3A @ 250V AC or 0.4VA maximum @ 28V DC maximum.

CSA: **File No. 023535_0_000 - Certified only when ordered with marking on switch.**
Add "/C" before first dash in part number to order CSA certified switch.
All models certified at 6A @ 125V AC or 3A @ 250V AC or 0.4VA maximum @ 28V maximum.

Distinctive Characteristics

Three methods of panel mounting: flat frame for flush with face or subpanel, snap-in, and PCB.

High insulating barriers increase isolation of circuits in multipole devices and provide added protection to contact points.

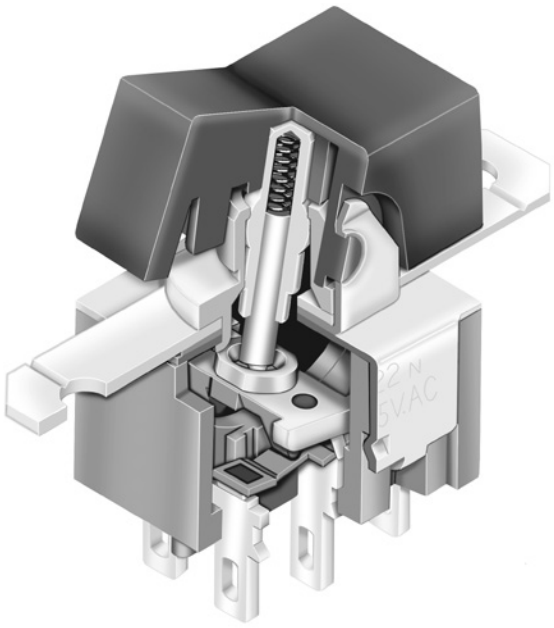
The molded diallyl phthalate case has a UL 94V-0 flammability rating.

Epoxy sealed terminals prevent entry of solder flux and other contaminants.

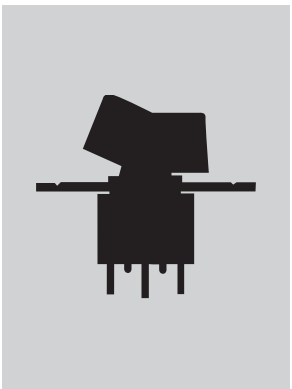
Prominent external insulating barriers increase insulation resistance and dielectric strength.

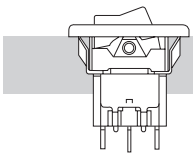
Bias guard prevents misalignment of contacts; interlocking of actuator block with rocker and internal guide does not allow transmission of diagonal force on rocker to reach contact mechanism.

Clinching of the frame to the case well above the base and terminals provides 1,500V dielectric strength.

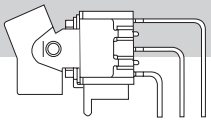


Actual Size

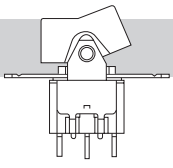




Snap-in Mount Page B64



Bracket PC Mount Page B72



Flat Frame Mount Page B83

TYPICAL SWITCH

M20 1 2 TJ W 01 — F C

Poles

1	SPDT
2	DPDT SP3T

Mounting Frame

TJ	Snap-in Frame

Terminals

01	Solder Lug*
02	Quick Connect
03	.250″ (6.35mm) Straight PC
05	.425″ (10.8mm) Wirewrap
06	.750″ (19.05mm) Wirewrap
07	.964″ (24.5mm) Wirewrap
08	1.062″ (27.0mm) Wirewrap

Rockers & Paddles

F	.450″ (11.43mm) Wide Rocker
G	.450″ (11.43mm) Wide Paddle
S	.453″ (11.5mm) False Illluminated Rocker in Black only

Circuits

2	ON	NONE	ON
3	ON	OFF	ON
5	ON	NONE	(ON)
8	(ON)	OFF	(ON)
9	ON	OFF	(ON)
*4	ON	ON	ON
*6	(ON)	ON	(ON)
*7	ON	ON	(ON)

( ) = Momentary

* 3-ON circuits

Rocker & Paddle Colors

A	Black
B	White
C	Red
E	Yellow
F	Green
G	Blue
H	Gray

Contact Materials & Ratings

W	Silver; Rated 6A @ 125V AC & 3A @ 250V AC
G	Gold; Rated 0.4VA max @ 28V AC/DC max
A	Gold over Silver; Rated 6A @ 125V AC & 0.4VA max @ 28V AC/DC max

* Wire harness & cable assemblies offered only in Americas

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

M2012TJW01-FC-1A

ORDERING EXAMPLE

— 1 A — [ ]

Optional Bezels

1	Bezel without LED
2	Bezel with 1 Round LED
3	Bezel with 2 Round LEDs
4	Bezel with 2 Rectangular LEDs

Bezel Colors

A	Black
B	White
E	Yellow
F	Green
G	Blue
H	Gray

LED Colors

1 LED

C	Red
F	Green

2 LEDs

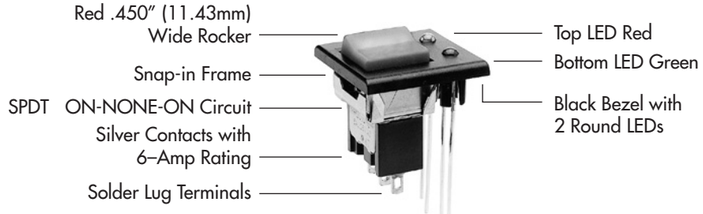
Top LED		Bottom LED	
C	Red	C	Red
E	Yellow	E	Yellow
F	Green	F	Green

IMPORTANT:

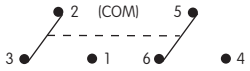
Switches are supplied without UL & CSA marking unless specified. **UL & CSA recognized only when ordered with marking on the switch.** Specific models, ratings, & ordering instructions are noted on General Specifications page.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

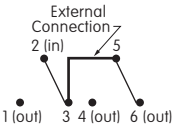
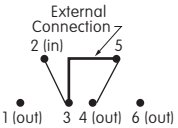
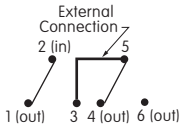
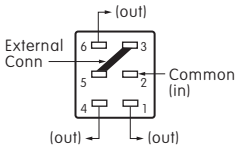
M2012TJW01-FC-3A-CF



POLES & CIRCUITS

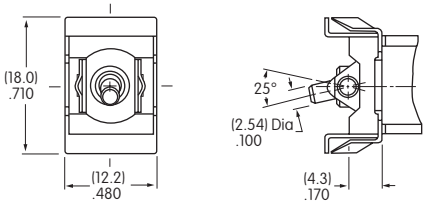
Pole	Model	Rocker Position ( ) = Momentary: Down	Center	Up	Connected Terminals: Down	Center	Up	Throw & Schematics
								Note: Terminal numbers are not actually on the switch.
SP	**M2012** **M2013** **M2015** **M2018** **M2019**	ON ON ON (ON) ON	NONE OFF NONE OFF OFF	ON ON (ON) (ON) (ON)	2-3	OPEN	2-1	SPDT
DP	**M2022** **M2023** **M2025** **M2028** **M2029**	ON ON ON (ON) ON	NONE OFF NONE OFF OFF	ON ON (ON) (ON) (ON)	2-3 5-6	OPEN	2-1 5-4	DPDT 

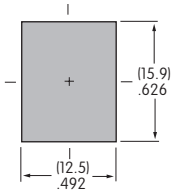
For 3 Throw (3-On)

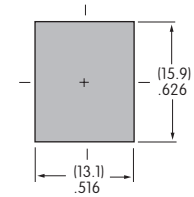
Pole	Model	Connected Terminals & Schematic: Down	Center	Up	External Connection
SP	**M2024** **M2026** **M2027**	ON (ON) ON  2-3 5-6	ON ON ON  2-3 5-4	ON (ON) (ON)  2-1 5-4	**The SP3T model utilizes a double pole base.** External connection must be made during field installation. 

MOUNTING FRAME

TJ **Snap-in Frame**



Panel Cutout for Single Pole without Bezel 

Panel Cutout for Double Pole without Bezel 

Panel Thickness without Bezel: .039" ~ .126" (1.0mm ~ 3.2mm)
Panel Thickness with Bezel: .039" ~ .098" (1.0mm ~ 2.5mm)

CONTACT MATERIALS & RATINGS

W	**Silver over Silver**	**Power Level**	**6A @ 125V AC & 3A @ 250V AC**
G	**Gold over Brass or Copper**	**Logic Level**	**0.4VA maximum @ 28V AC/DC maximum**

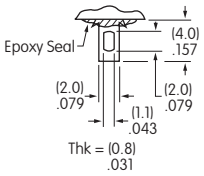
Note: See Supplement section to find complete explanation of operating range.

A	**Gold over Silver**	**Power Level or Logic Level**	**6A @ 125V AC or 0.4VA maximum @ 28V AC/DC maximum**

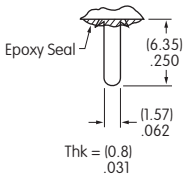
Note: This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section to find complete explanation of dual rating and operating range.

TERMINALS

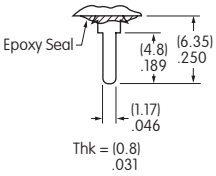
01 **Solder Lug**

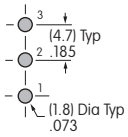


02 **.062" (1.57mm) Wide Quick Connect**

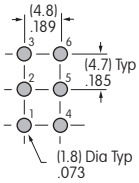


03 **.250" (6.35mm) Straight PC**





Single Pole



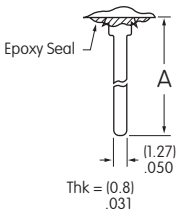
Double Pole

05 **.425" (10.8mm) Wirewrap or Extended PC**

06 **.750" (19.05mm) Wirewrap or Extended PC**

07 **.964" (24.5mm) Wirewrap or Extended PC**

08 **1.062" (27.0mm) Wirewrap or Extended PC**



If using as extended PC terminal, refer to the above footprints.

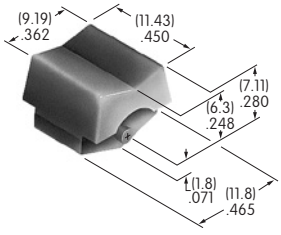
Dimension A = terminal lengths as shown beside the terminal codes at the left.

ROCKERS & PADDLES

F **AT4150**
.450" (11.43mm)
Wide Rocker

Material: Polyamide
Finish: Matte

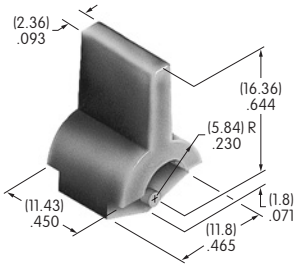
Colors Available:
A, B, C, E, F, G, H



G **AT4151**
.450" (11.43mm)
Wide Paddle

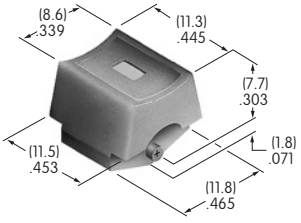
Material: Polyamide
Finish: Matte

Colors Available:
A, B, C, E, F, G, H



S **AT466 .453" (11.5mm)**
False Illuminated Rocker

	Rocker	False Illuminator
Material:	Polycarbonate	Acrylonitrile Butadiene Styrene
Finish:	Glossy	
Colors:	Black	White and Red



When a bezel is selected with AT466, glossy polycarbonate AT207 is supplied.

Cap Colors Available:

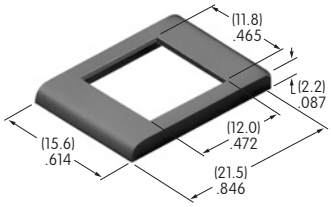
A Black **B** White **C** Red **E** Yellow **F** Green **G** Blue **H** Gray

OPTIONAL SNAP-IN BEZELS & BEZEL COLORS

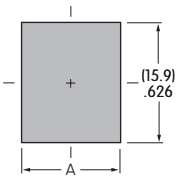
1 AT2107 Bezel

Material: Polyamide

Finish: Matte



A	Black
B	White
E	Yellow
F	Green
G	Blue
H	Gray



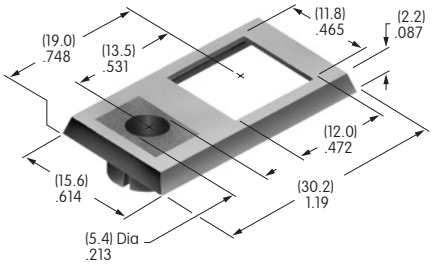
	Single Pole	Double Pole
A	(12.5)mm .492″	(13.1)mm .516″

2 AT208 Bezel for AT070 LED

Material: Polycarbonate

Finish: Glossy

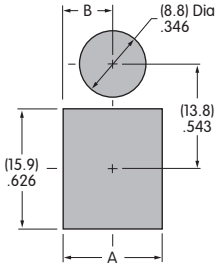
Contact factory for matte finish.



A	Black

LED colors & specifications on next page.

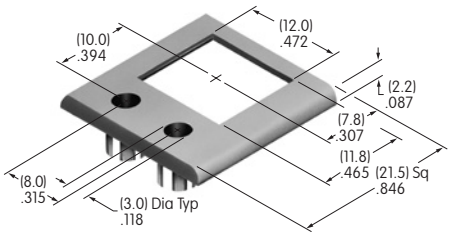
	Single Pole	Double Pole
A	(12.5)mm .492″	(13.1)mm .516″
B	(6.25)mm .246″	(6.55)mm .258″



3 AT212 Bezel for AT617 LED

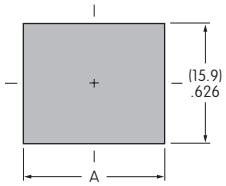
Material: Polycarbonate

Finish: Semi-glossy



A	Black

LED colors & specifications on next page.

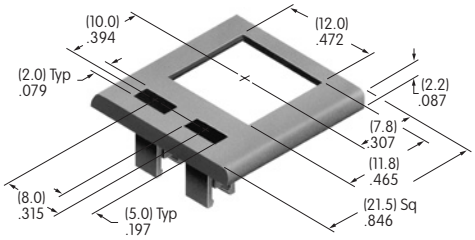


	Single Pole	Double Pole
A	(18.4)mm .724″	(18.7)mm .736″

4 AT213 Bezel for AT618 LED

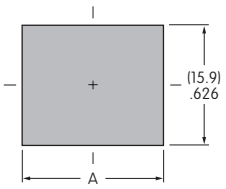
Material: Polycarbonate

Finish: Semi-glossy



A	Black

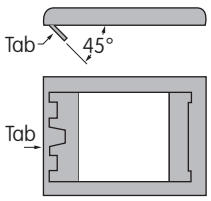
LED colors & specifications on next page.



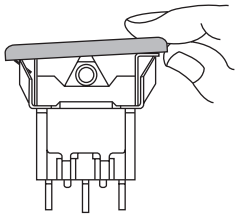
	Single Pole	Double Pole
A	(18.4)mm .724″	(18.7)mm .736″

Bezel Assembly

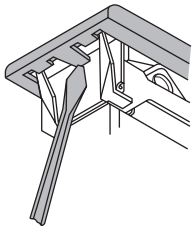
1. Pry out tab on bezel to a 45° angle.



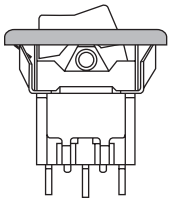
2. Insert switch frame under tab and snap on bezel.



3. Push tab back into place.



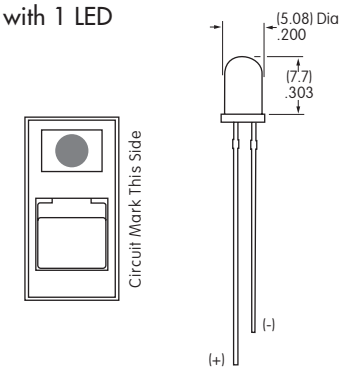
4. Snap assembled bezel and switch into panel.



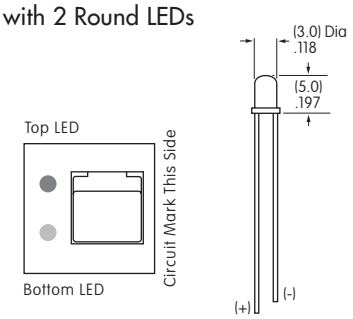
LED COLORS & SPECIFICATIONS

Bezel Orientation on Switch

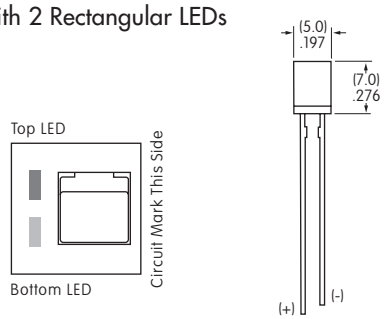
AT070 LED
For Bezel AT208
with 1 LED



AT617 LED
For Bezel AT212
with 2 Round LEDs



AT618 LED
For Bezel AT213
with 2 Rectangular LEDs



Note: Lead lengths may differ from manufacturing lot to lot. The longer lead is the anode (+).

		AT070		AT617			AT618		
(+) (-)		C	F	C	E	F	C	E	F
	Color	Red	Green	Red	Yellow	Green	Red	Yellow	Green
Forward Peak Current	I_{FM}	25mA	50mA	30mA	30mA	25mA	10mA	30mA	30mA
Typical Forward Current	I_F	20mA	30mA	20mA	20mA	20mA	8mA	24mA	24mA
Forward Voltage	V_F	2.8V	2.1V	2.0V	2.1V	2.2V	1.9V	2.0V	2.1V
Reverse Peak Voltage	V_{RM}	4V	5V	5V	5V	5V	5V	5V	5V
Current Reduction Rate Above 25°C	ΔI_F	0.33 mA/°C	0.40 mA/°C	0.40 mA/°C	0.40 mA/°C	0.33 mA/°C	0.13 mA/°C	0.40 mA/°C	0.40 mA/°C
Ambient Temperature Range (when used with a bezel)		−10° ~ +70°C		−15° ~ +70°C			−15° ~ +70°C		

The electrical specifications shown are determined at a basic temperature of 25°C.
LED circuit is independent of switch operation. LED is colored in OFF state.

If the source voltage is greater than the rated voltage of the LED, a ballast resistor must be connected in series with the lamp.
The ballast resistor calculation and more lamp detail are shown in the Supplement section.

LEGENDS

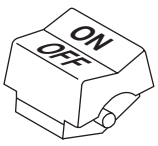
NKK Switches can provide custom legends for caps. Contact factory for more information.

Suggested Printable Area for Cap

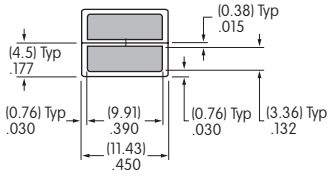
Recommended Print Method:

Pad Print

Epoxy based ink is recommended.



AT4150

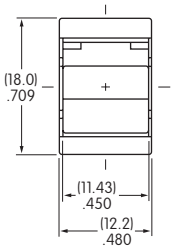


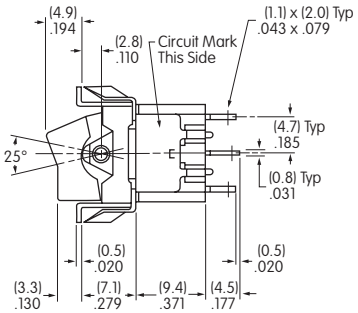
Shaded areas are printable areas.

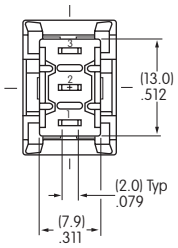
TYPICAL SWITCH DIMENSIONS

Snap-in Frame • Solder Lug

Single Pole



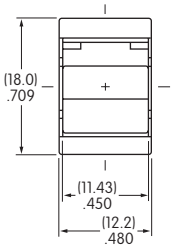


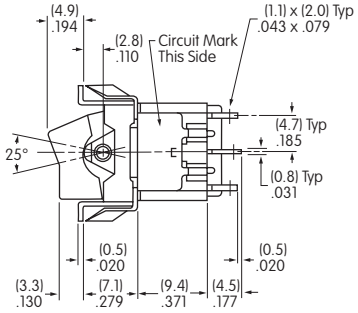


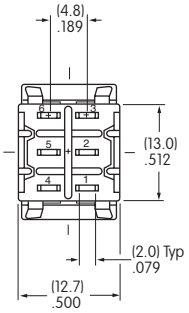
M2012TJW01-FC

Snap-in Frame • Solder Lug

Double Pole



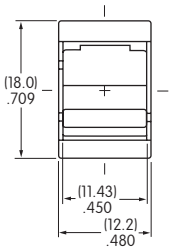


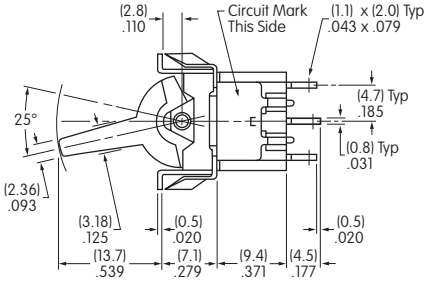


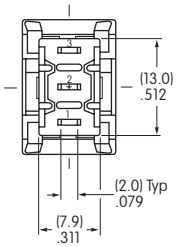
M2022TJW01-FC

Snap-in Frame • Solder Lug

Single Pole



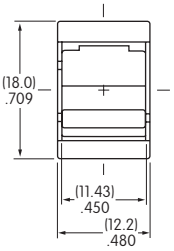


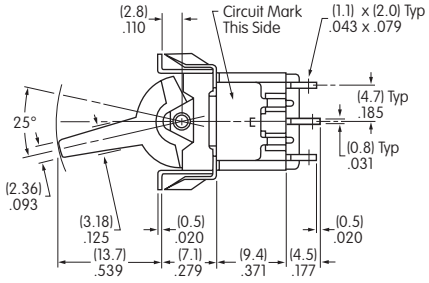


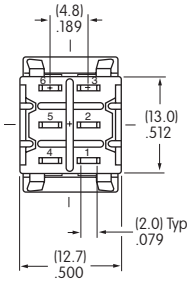
M2012TJW01-GC

Snap-in Frame • Solder Lug

Double Pole



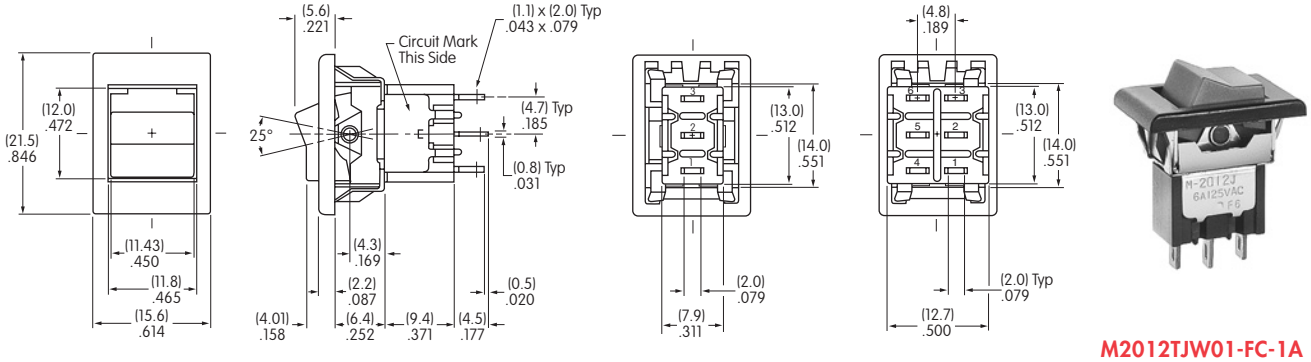




M2022TJW01-GC

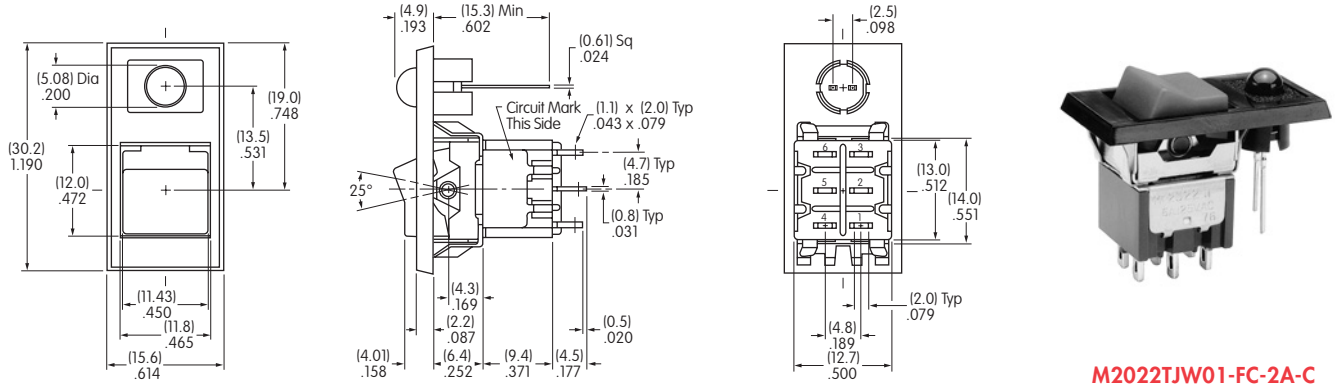
TYPICAL SWITCH DIMENSIONS

Single & Double Pole — Snap-in Frame • AT2107 Bezel • Solder Lug



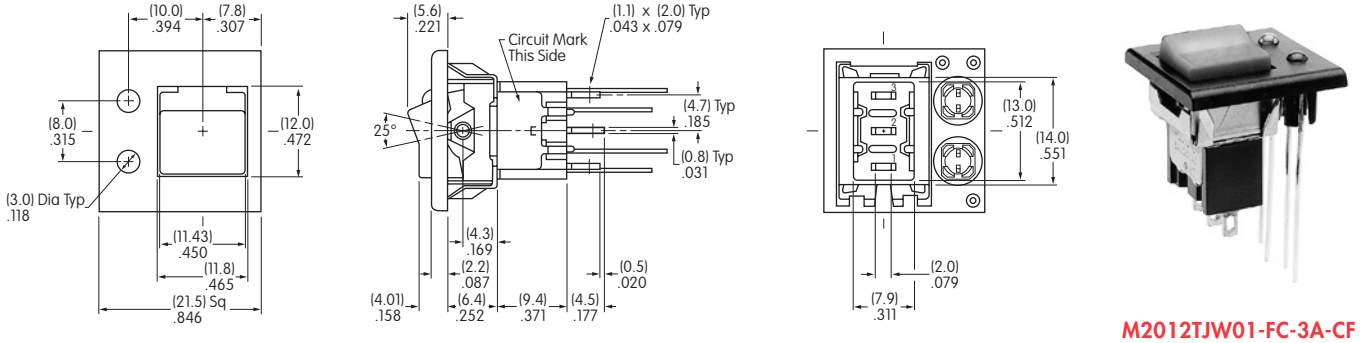
M2012TJW01-FC-1A

Double Pole — Snap-in Frame • AT208 Bezel • Solder Lug



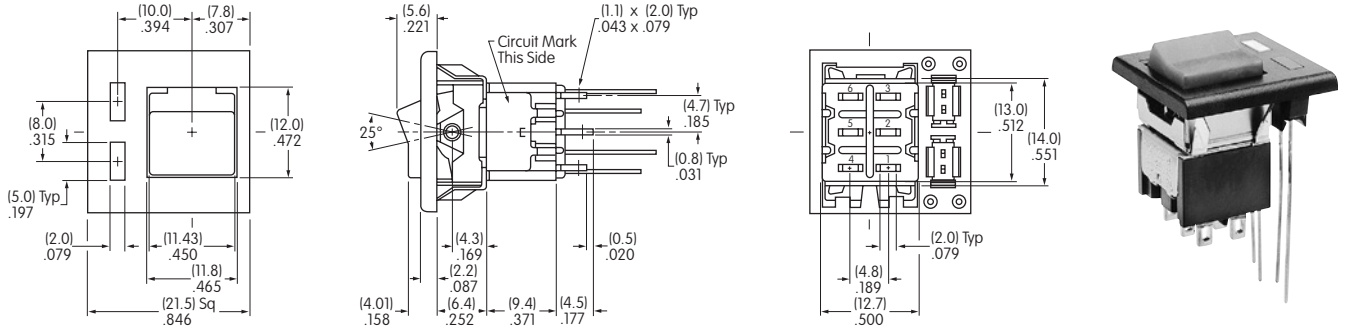
M2022TJW01-FC-2A-C

Single Pole — Snap-in Frame • AT212 Bezel • Solder Lug



M2012TJW01-FC-3A-CF

Double Pole — Snap-in Frame • AT213 Bezel • Solder Lug



M2022TJW01-FC-4A-CF

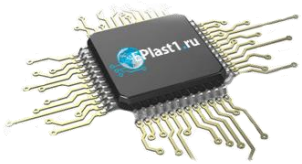
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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